Notes on the Quenda, *Isoodon obesulus.*—Where I live, in the Darling Range near Mundaring Weir, Quendas inhabit the thick vegetation along watercourses. Where there is permanent water or a layer of saturated soil, usually 5 to 15 metres in width, *Lepidospermum tetraquetrum* and *Agonis linearifolia* are the dominant constituents of a closed canopy 3 or more metres high. This is interspersed with taller trees of *Banksia littoralis, Melaleuca parviflora* and *Eucalyptus patens.* Along the fringes where water is less permanent the canopy is lower and less closed; the *Lepidospermum* and *Agonis* are less frequent; there are numerous *Xanthorrhoea preissii, Mirbelia dilatata,* and *Acacia alata,* and a lesser number of braeken *(Pteridium aquilinum), Macrozamia reidlei* and *Albizzia distachya.* This formation quickly gives way to more sclerophyllous and very open shrubbery characteristic of the dry lateritic slopes of the *E. marginata* and *E. calophylla* forest. This latter shrubbery, together with its component ground flora, is much more diverse than that along the watercourses. The type of vegetation in the area discussed is very similar to that at Jarrahdale which has been described by G. M. Storr *(J. Royal Soc. of Western Australia,* 47 (1), 1964: 1-2).

In the areas of perpetual shade along the streams there is abundant litter; the soil remains fairly moist, and, during the summer, temperatures are lower than in more exposed areas. It is in these areas that Quendas usually build their nests, often on slight mounds which in some cases may be caused from decaying vegetation of previous nests. Some nests are built partly below ground and consist of a circular bowl-like depression between 24 and 30 cm across and about 15 cm deep, thickly lined and roofed over with dead leaves and rushes with an entrance on one side up to 15 cm wide. Occupied nests are usually dry inside although the outside litter may be quite soggy.

I have not determined whether both sexes inhabit nests or which merely shelter under growing vegetation. Quendas, particularly juveniles, are fairly active during the day becoming more active at dusk. At night they wander considerable distances into the open sclerophyll forest.

In winter Quendas sometimes move from ground that has become waterlogged to higher areas and may shelter under *Xanthorrhoea* and *Macrozamia.* I have never seen nests built away from creeks or swamps.

When the dense vegetation and litter along the watercourses has been destroyed by fires, Quendas often seek refuge in unused rabbit warrens or hollows from fallen trees. I have even seen Quendas in winter crouched in holes partly filled with water.

J. A. W. Kirsch *(W. Aust. Nat.,* 10: 178) has discussed the burrowing of Quendas in captivity and suggests that this may be an adaptation to avoid excessive heat and to prevent moisture loss in very hot weather. Whether Quendas burrow under natural conditions in the Darling Range is doubtful. When the dense canopy along the watercourses has been destroyed by fire, individuals may burrow but are more likely to take advantage of existing hollows.

—JOHN DELL, Kalamunda.

A Diurnal Movement of White-faced Heron, *Ardea novae-hollandiae.* —During autumn, flocks of White-faced Herons fly over Harvey in an easterly direction during the morning and during the afternoon flocks may be seen passing over in a westerly direction. The line of flight over the town is just to the north of Uduc Road, the main business centre.

During the years of observance—1963 to 1970 inclusive—flights have developed during March, in some years, e.g. 1967 and 1970, quite early in the month. Flights continue throughout April, but wane during May, ceasing to be evident by the end of the month.

The eastward flight usually takes place between 0930 and 1030 hrs., but appears to get later as the season advances, e.g. the main flight at 1150 hrs. on 13 April 1966. The westward flight may be observed between 1430 and 1530 hrs. as a rule, with a tendency to become earlier

as the season advances, e.g. 1300 hrs. on 15 April 1966. Birds sometimes proceed in one's and two's but are more usually in flocks of from twenty to thirty. Flocks estimated at over two hundred have been noted.

Efforts to determine whence the birds come in the morning have not been conclusive, but little difficulty was experienced in locating the destination of the flights—the Harvey Dam. Having passed over the town, the birds follow the valley of the Harvey River, pass low over the retaining wall of the Dam and settle on logs by the waterside or on the earth banks. The return flight appears to be a reversal of this process. A curious feature of the whole matter is that, having reached the dam, the birds appear to do nothing—they merely stand about. On a casual visit to Harvey on 13 May 1959, I saw about forty birds in flight over the town and later counted six hundred birds and estimated, conservatively, one thousand in all at the Dam.

Enquiry among farmers in the vicinity reveals that the movement is recognised, but little additional information has been forthcoming. Mr. C. Knight observes that birds feed on the pasture lands at first light, return to their roosting places "to warm up" and then fly to the Dam. He knew of one roosting place near the South West Highway where birds roosted in trees by a swamp. He has disturbed them while working with a tractor at night.

Mr. E. A. Taylor has observed that herons feed in the irrigated pastures in the mornings and in the evenings, i.e. when not at the Dam. The first irrigation of the season attracts many herons, apparently to feed when beetles, crickets and other animals are driven to the surface by water.

Pellets which I have found by the Harvey Dam seem more likely to have been left by herons than any other species and these seem to be made up in part of beetle remains—apparently *Heteronychus sanctae-helenae*, a common pest of grassland and clover pasture.

The intensity of the daily flights varies somewhat from year to year. It appeared low in 1965 and in 1968 and in 1969.

So far as is known, similar flights are not general, but on 2 May 1965 a number of herons was observed flying from east to west over Waroona at c.1500 hrs. suggesting that a similar movement might occur there. Waroona is similarly situated to Harvey in relation to a major dam.

Irrigation, normally carried on from mid-October to mid-April, has a profound effect upon pastures, but there appears no reason for directly linking the bird movement with this activity, nor does the onset of the winter rains appear to have any seasonal influence.

—E. H. SEDGWICK, Harvey.